

PRICE
15¢

PHOTOGRAPH BY
GEORGE L. LINDNER
ARMED FORCES
PHOTOGRAPHIC
SECTION, LIBRARY
ARMED FORCES

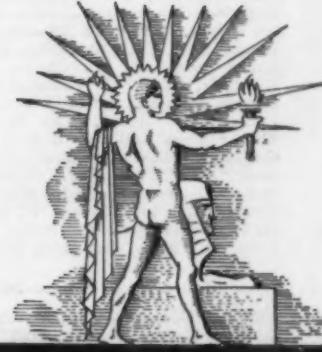
DEC 15 1930

SCIENCE NEWSLETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE•



British Royal Air Force official photograph Crown copyright reserved.



DECEMBER 13, 1930

Ancient Stronghold in Japhethite Land

See Page 374

A

SCIENCE SERVICE PUBLICATION

SCIENCE NEWS LETTER

Vol XVIII

No. 505

The Weekly Summary of Current Science

Published by
SCIENCE SERVICE

The Institution for the Popularization of Science organized under the auspices of the National Academy of Sciences, the National Research Council and the American Association for the Advancement of Science.

Edited by WATSON DAVIS

Subscription rates—\$5.00 a year postpaid, 15 cents a copy. Ten or more copies to same address, 5 cents a copy. Special reduced subscription rates are available to members of the American Association for the Advancement of Science.

In requesting change of address, please give old as well as new address.

Advertising rates furnished on application.

Board of Trustees of Science Service

Honorary President, William E. Ritter, University of California. Representing the American Association for the Advancement of Science, J. McKeen Cattell, *President*, Editor, *Science*, Garrison, N. Y.; Burton E. Livingston, Johns Hopkins University, Baltimore, Md.; Raymond Pearl, Director, Institute for Biological Research, Johns Hopkins University, Baltimore, Md. Representing the National Academy of Sciences, John C. Merriam, President, Carnegie Institution of Washington; R. A. Millikan, Director, Norman Bridge Laboratory of Physics, California Institute of Technology, Pasadena, California; David White, Senior Geologist, U. S. Geological Survey. Representing National Research Council, Vernon Kellogg, *Vice-President and Chairman of Executive Committee*, Permanent Secretary, National Research Council, Washington, D. C.; C. G. Abbot, Secretary, Smithsonian Institution, Washington, D. C.; Harrison E. Howe, Editor of Industrial and Engineering Chemistry. Representing Journalistic Profession, John H. Finley, Associate Editor, New York Times; Mark Sullivan, Writer, Washington, D. C.; Marlen E. Pew, Editor of Editor and Publisher, New York City. Representing E. W. Scripps Estate, Harry L. Smithton, *Treasurer*, Cincinnati, Ohio; Robert P. Scripps, Scripps-Howard Newspapers, West Chester, Ohio; Thomas L. Sidlo, Cleveland, Ohio.

Staff of Science Service

Acting Director, Vernon Kellogg; Managing Editor, Watson Davis; Staff writers: Frank Thone, James Stokley, Emily C. Davis, Jane Stafford, Marjorie Van de Water, J. W. Young, Elizabeth Spence; Librarian, Minna Gill; Sales and Advertising Manager, Hallie Jenkins.

Copyright, 1930, by Science Service, Inc. Reproduction of any portion of the SCIENCE NEWS LETTER is strictly prohibited since it is distributed for personal, school, club or library use only. Newspapers, magazines and other publications are invited to avail themselves of the numerous syndicate services issued by Science Service, details and samples of which will gladly be sent on request.

Publication Office, 1930 Clifton Ave., Baltimore, Md. Editorial and Executive Office, 21st and B Sts., N. W., Washington, D. C.

Address all communications to Washington, D. C. Cable address: Scienservc, Washington.

Entered as second class matter October 1, 1926, at the postoffice at Baltimore, Md., under the act of March 3, 1879. Established in mimeographed form March 13, 1922. Title registered as trade-mark, U. S. Patent Office.

DO YOU KNOW THAT

Helium, famed for its use as a non-inflammable gas for dirigibles, may be used to heat and to cool the home.

Bas reliefs on an Egyptian temple show that methods of bee keeping in Egypt have not changed appreciably since 2600 B. C.

The American Chemical Society is trying to find out how much chemistry the housewife knows, so that it can plan a suitable course in detecting impure foods.

A New Hampshire agricultural expert points out that the farmer in Holland makes his small acreage yield four times as much produce to an acre as the American farmer produces on his bigger farm.

A German city has a large group of apartment houses laid out in three concentric circles, the inner units being the tallest.

Erosion of soil in a single country in the southeast has turned 91,000 acres of land, formerly cultivated, into land unfit for agriculture.

Danish dairy farmers are selling milk in sheets—the purchaser dissolves the dehydrated sheet in hot water to restore it to a liquid.

Scarlet fever records show that the Japanese are 45 times as susceptible to this disease as Chinese are.

Methods of coloring the hair blonde, henna, or black were all known to the beauty seekers of ancient Rome.

Gas warfare goes back to the war between Athens and Sparta, in the fifth century B. C.

Mexico has been making large reductions in cavalry forces of the army, and has been distributing the horses among the peasants.

WITH THE SCIENCES THIS WEEK

ASTRONOMY		METEOROLOGY	
Six of Shaw's Universe Makers	381	History of 1930 Drought	376
AVIATION		Possible Causes of Fog Death	383
Fastest Transport Plane	372		
ANTHROPOLOGY		MICROSCOPY	
Peking Man Skull	373	Revelations of New Microscope	372
ARCHAEOLOGY			
Skeletons of Notables	376	NUTRITION	
Susa, Oldest City on Earth	374	Animals Make Vitamin A	376
BOTANY		OCEANOGRAPHY	
New Fungus Found	373	Hydrographic Office Centenary	376
Teazel Pods—Nature Ramblings	382	ORNITHOLOGY	
CHEMISTRY		King Penguin	380
Animals Make Vitamin A	376	PALEONTOLOGY	
New Grain Fumigant	377	Alaskan "Prehistoric Animal"	382
ECONOMICS		Fossils From Rancho La Brea—"A	
Funeral Costs	377	Classic of Science"	378
GENERAL SCIENCE		PHYSICS	
Carnegie Annual Exhibition	372	New Gravity Constant Value	371
First Glances at New Books	384	PSYCHOLOGY	
GEOPHYSICS		Disobedience A Normal Stage	377
Mt. Lassen Steam Vents	383	RADIO	
New Hot Springs	376	Prepare for Sound With Television	381
MEDICINE		ROENTGENOLOGY	
Diseases of Middle Age	371	X-Rays for Beauty	377
Leprosy Arrested	371	X-Rays Before Operation	381
Signal From Cancer-Causing Substances	380	SOCIOLOGY	
Sugar-Coated Tablets	377	Immigrants by Trades	372

Science Service presents over the radio, an address,

A NEW HOME FOR REPTILES

By Dr. William M. Mann, Director of the National Zoological Park, in Washington, which is part of the Smithsonian Institution and one of the country's most important "zoos."

Friday, December 19, 1930, at 3:45 p. m., Eastern Standard Time

Over Stations of
The Columbia Broadcasting System

PHYSICS

Standards Scientist Announces Final Gravity Constant Value

New Figure, the Result of Seven Years' Work by Dr. Heyl, Is the Most Accurate Determination Ever Made

THE FINAL value for the most accurate measurement ever made of the constant of gravitation, from which can be figured, for instance, the mass of the earth and the force with which the earth pulls the moon, has now been determined by Dr. Paul R. Heyl, physicist of the U. S. Bureau of Standards in Washington after seven years' work.

Speaking before the Philosophical Society of Washington, he announced that the value can be expressed by the fraction 6.670 over 100,000,000. A full technical account of this work is published in the December issue of the Bureau of Standards *Journal of Research*.

According to Sir Isaac Newton's law of gravitation, any two bodies in the universe attract each other with a force that is greater as they are more massive and less in proportion to the square of the distance separating them. The exact force is obtained in scientific units by multiplying together the two masses, dividing by the square of the distance between them and multiplying the result by the constant of gravitation. Accurate knowledge of the force of gravity is important in many branches of science, from the study of the paths of projectiles fired from guns to that of the motions of the stars. The physicist refers to the constant as *G*.

The First Effort

The first effort to determine *G* was by a Frenchman, Pierre Bouguer, in 1740, but success was not attained until 25 years later when an English astronomer, Rev. Nevil Maskelyne, found the attraction of a Scottish mountain, Schiehallien, which has a short ridge running east and west and steep sides on the north and south. He observed a plumb bob on each side of the mountain, and, by comparisons with the stars, measured the amount that the mountain pulled the plumb line from the vertical. This value was only a rough approximation, however, because it was not possible to find with precision the mass of the mountain.

In the years 1797 and 1798, an Eng-

lish physicist, Henry Cavendish, first performed the experiment with small, known masses in the laboratory. With this method, two tiny balls are attached to the end of a little rod, and the rod is balanced at the end of a long thin wire. As two large masses of metal are brought near, the small balls are pulled toward them and the wire is twisted. A tiny mirror attached to the wire near the rod turns with it, and moves a spot of light reflected from it to a distant screen. Essentially this is the method used in the new determination at the Bureau of Standards.

The largest masses used by Dr. Heyl were steel cylinders weighing about 150 pounds each. The smallest were balls of gold, platinum and glass, each weighing about two ounces. Though the attraction that the large masses exerted on the small ones was about the same as the weight of the ink in the period at the end of this sentence, this force was measured with an accuracy of a thirtieth of one per cent. Instead of merely measuring the displacement in the position when the large masses were far away and when they were near, Dr. Heyl set the small masses swinging back and forth and measured the time of their swing. This period of oscillation changed as the large masses were brought close.

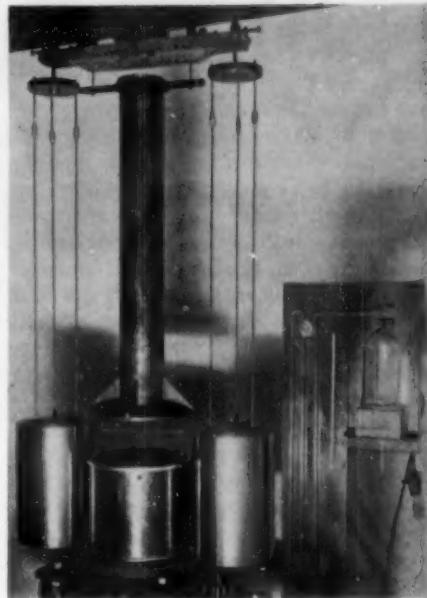
Science News Letter, December 13, 1930

MEDICINE

Leprosy Arrested But Not "Cured" Expert Says

PATIENTS discharged from the leprosy hospital at Carville, La., cannot be spoken of as "cured" of the disease, states Dr. D. E. Denny, commanding officer of the Carville Leprosarium.

A few of the discharged cases go back into active life, he said, and about 50 per cent. of those discharged go back to their families. The others have no place to go, or their families do not want them, "and we have accepted those back into the hospital for the rest of



STEEL CYLINDERS

And little gold balls replaced a mountain and a plumb line in Dr. Heyl's determination of the gravity constant. The mountain and plumb line were used by Pierre Bouguer in the first effort to find "G" in 1740

their lives. When we send these out, many of them are absolutely unable to take care of themselves. We cannot speak of them as cured. We have not restored any functions. We have simply discharged them as being no longer a menace to public health."

Science News Letter, December 13, 1930

MEDICINE

Health Institute To Study Diseases of Middle Age

FIFTY is now considered by many health specialists as the dangerous age, it appears from testimony offered by Dr. L. R. Thompson of the U. S. Public Health service to the House Committee on Appropriations.

"We have increased the span of life," he said, "but we have done it from the standpoint of the child, not from the standpoint of the adult. None of us who have passed our fortieth year have any reason to believe we will live any longer at all than our ancestors. In fact, we are probably not going to live as long.

Dr. Thompson outlined some of the expansions in research work planned by the National Institute of Health for 1931-32.

These include new investigations into the cause of heart disease, responsible for most adult deaths; and an expendi-

GENERAL SCIENCE

ture of around \$70,000 to lay the groundwork for extensive researches in years to come of the causes of cancer and means of preventing or curing this disease which is responsible for the second largest number of deaths among adults in this country.

Although a large cancer research program will probably be undertaken in years to come, the work will proceed slowly for a while, Dr. Thompson told the committee. It takes time to find men qualified to do the work. There is much long, slow work to be done in studying the growth and cause of the cancer cells.

Other lines of research which will be pursued during the coming year much as in past years are industrial hygiene studies, milk investigations, nutritional work, pellagra, stream pollution studies, undulant fever studies.

Science News Letter, December 13, 1930

SOCIOLOGY

Enter Immigrants by Trades Is Recommendation

"**B**UTCHER, baker, or candlestick maker?" may be the question put hereafter to foreigners seeking to emigrate to the United States.

In his annual report just made to the Secretary of Labor, Harry Hull, U. S. Commissioner of Immigration, recommends that we forget nationalities in selecting immigrants, and allow entries on a more scientific basis.

"Power to reject at the source aliens not needed in our industrial life would result in a very large reduction in the number of aliens entering the country, and at the same time all those coming would be better qualified to make good American citizens," Mr. Hull states.

Science News Letter, December 13, 1930



FASTEST TRANSPORT PLANE

A four-passenger Lockheed airplane which in preliminary tests flew 200 miles per hour. Designed to carry gasoline enough for a 2,800-mile flight, it has been ordered by the Army for the transportation of high officers to outlying posts. If Lindbergh had been flying this ship he would have crossed the Atlantic in half the time actually consumed.

Carnegie Exhibits to Portray Variety of Researches

Latest Facts About Sun's Energy, Metabolism and Maya Exploration Will be Pictured At Annual Showing

RESEARCHES ranging from the sun-light-capturing mechanism of plants to the structure of Maya pyramids are to be graphically presented in Washington at the annual exhibit of the Carnegie Institution of Washington, Dec. 13, 14 and 15.

A prominent place in the exhibits will be given to studies now in progress on the utilization of the sun's energy, particularly as it is gathered by plants and later released again by man for his use in food or fuel.

What we ourselves do with the energy stored in foods, is the subject of research in another department. This will be illustrated in an exhibit on basal metabolism. Basal metabolism is the energy conversion rate of the human body when resting quietly, several hours subsequent to the latest meal. The tests are usually made before breakfast. Basal metabolism tests have come to be of great importance in medicine.

Another exhibit will show motion pictures of the movements of wandering cells in the body. There will also be an exhibit demonstrating important discoveries made during the past year on the effects of glandular secretions on the development of hereditary characters. Still another will show how living cells transmit electric currents.

The year's progress in the excavation

and restoration of the splendid Maya ruins in Yucatan and Central America will be shown in pictures and models. The outstanding individual pieces of work in this field during 1930 have been the rebuilding of the "Caracol" at Chichen Itza, which was probably an astronomical observatory as well as a temple, and the discovery of an early pyramid hidden within a later one, at Uaxactun.

In the exhibit arranged by the Geological Laboratory, the story of how the crystals in rocks can be made to tell something of the way they came into being will be told, with side-lights on the general physical behavior of heated crystals.

Another exhibit expected to attract much attention is one of a peculiar one-celled marine plant, *Valonia*, whose cells are so big they can be handled like eggs, and will survive surgical operations.

Science News Letter, December 13, 1930

MICROSCOPY

New Microscope Reveals Plant Cell's Secrets

ULTRA-MINUTE details of cell structure never before seen are now made visible through the use of a new type of microscope lens, Prof. William Seifriz of the University of Pennsylvania has announced. Structures on the cell wall and in the living protoplasm itself one fifty-thousandth of an inch or less in width can now be examined and measured.

The secret of the new microscope is a tiny mirror of gold or platinum deposited on the inner side of the lowermost lens, in such a way that it reflects light directly downward on the object to be observed. The light is scattered by the object and reenters the lens around the sides and passes upward to the eye of the observer. It is the invention of a Swiss scientist, Charles Spierer, who has carried on some of his researches in cooperation with Professor Seifriz.

Under the intimate illumination made possible by this mirror-bearing lens, the inner layer of a plant cell wall is shown to have a structure as though it were made up of a multitude of exceedingly fine rods, like a close-set pole fence. These are termed "Micelles," and are believed to be made up of bundles of carbohydrate molecules, which are too small to be visible by any microscopic treatment.

Living protoplasm shows a similar structure, of fine, closely parallel strands or fibers, with thickenings on them in places, in a more uniform background of



ULTRAMICROSCOPIC DETAILS

Of the structure of the inner wall of a plant cell, made visible for the first time by the new Spierer microscope lens.

dark substances. The two structural types are so similar in appearance that it is hard to tell them apart, Professor Seifriz says. However, he is not ready to commit himself to the opinion that the solid stripes of the non-living cell wall are due simply to a direct hardening or precipitation action of the fluid, living protoplasm. The settlement of this and other questions raised by the fine details made visible by the new lens, he says, must await further research.

Science News Letter, December 13, 1930

One of the dinner table accessories in wealthy Roman homes was a silver coal-pan to keep the bread and pastry hot.

Popularity of miniature golf courses has greatly stimulated use of cotton fabrics for awnings, chairs, umbrellas, and protective tarpaulins.

ANTHROPOLOGY

Peking Man Skull May Belong To Variety of Java Man

German Anthropologist Declares Measurements of Chinese Skull Like Java Cranium; Hrdlicka Disagrees

In the famous Peking Man, two of whose skulls have recently been discovered in Chinese caves, merely a variety of the longer-known but more fragmentary Ape-Man of Java?

Prof. Franz Weidenreich of Heidelberg inclines to this opinion. In an article written for the German technical journal *Die Naturwissenschaften*, he compares the first of the two Chinese skulls with that of *Pithecanthropus*, and concludes that the measurements approach each other closely at all points. He declares that the skull is much more similar to the Java cranium than it is to a typical Neanderthal, in both shape and size.

For this reason he would put Peking Man into the same genus and species with the Java Ape-Man, recognizing him only as a variety. This would involve a change of name, discarding *Sinanthropus pekinensis* proposed by Dr. Davidson Black and substituting *Pithecanthropus erectus*, variety *sinensis*.

Peking Man is not Java Man, nor any variety of him, said Dr. Ales Hrdlicka, anthropologist of the U. S. National Museum, when Science Service asked his opinion of Prof. Franz Weidenreich's theory that identifies the two species.

"The more we see of these Chinese skulls," said Dr. Hrdlicka, "the more apparent it becomes that we are dealing with a Neanderthaloid type. There is no use indulging in errant speculation in any other direction. Every feature that has been laid bare by the workers in China has so far but strengthened the evidence of Neanderthal connections. If Peking Man is to be given varietal rank, his new name should be *Homo neanderthalensis*, variety *sinensis* or *pekinensis*, but certainly not *pithecanthropus*."

In making his comparison, Prof. Weidenreich used only the measurements of the first skull, discovered a year ago. Data on the second skull, found only during recent weeks, were not available when he wrote. The first skull is now regarded as that of an

adolescent female and it would hardly be fair to compare it for size with the skull of an adult male Neanderthal and then conclude that it differs from the latter in size and hence must be assigned to the inferior and presumably much older genus of *Pithecanthropus*.

"The Peking deposits are not yet exhausted," Dr. Hrdlicka continued. "They may yield any day archaeological and other evidence that will definitely clear the whole problem. Until then, it would seem, speculation as to the nature of the specimens can not be too careful, particularly when it comes to associating the remains with a prehuman or sub-human type, such as the *Pithecanthropus*, the locality of which is farther from that of the Peking finds than is that of the easternmost Neanderthal.

"It might further be asked, if such relatively small differences in the size of the skull as those shown between the Peking skull and some other Neanderthalers, would be given such taxonomic value, how many species and genera would it not be possible to make from any existing human group, where one normal skull may be almost twice as large as another? Besides which there are Neanderthalers that are no larger than the Peking specimen."

Science News Letter, December 13, 1930

BOTANY

New Fungus Discovered In General Grant Park

A NEW species of mushroom, recently discovered in California, has been named *Cantharellus bonarii*. Despite the brilliance of its orange-yellow cap, it is not easily discovered, since it grows partially hidden in deep humus under pine and fir.

Elizabeth Eaton Morse, who studied and named the new fungus, tells of its discovery in the General Grant National Park by N. Nielson and F. Mitchell, who brought it to her for identification.

Science News Letter, December 13, 1930

ARCHAEOLOGY

Susa, Oldest City on Earth, Tells About Early Culture

Japheth, as Namesake of First Civilized Peoples, is Now Honored Above His Older Brothers, Ham and Shem

By FRANK THONE

UR of the Chaldees, lately hailed as the oldest city on earth, must yield place to a city that is older still. The home town of Abraham, that stood on the Mesopotamian plain before the Flood, received its first settlers and learned its first civilization from the hill country of Elam to the east, whose chief city was Susa. Before Ur ever arose, before Babylon the great was even dreamed of, Susa was. How large a city stood there under the flank of the Zagros mountains, in the gray twilight before the dawn of history, we do not know; there is not even a tradition of its kings or priests, nor of its conquered provinces if it had any.

But Susa was there, a settled and populous community, with highly developed arts and industries and presumably with a well-organized system of government and a religion. The inhabitants were in the last stage of the New Stone Age, or rather in the transition period between it and the Age of Metals.

Focal Point of Culture

The New Stone Age, as everybody knows, has been given the special name of Neolithic. This last end of it, when the application of metals was gradually being discovered, has recently acquired the name "Aeneolithic" or "Eneolithic," to indicate its transitional character.

Aeneolithic pottery, stones, copper and other artifacts have been found across a vast stretch of territory in Asia, all the way from what is now Turkey to Baluchistan, and there are indications that the culture extended on into interior China. Susa was not the capital of an empire of this extent, but merely the focal point of the highest Aeneolithic culture, like Paris or Vienna in modern Europe.

What were the Aeneolithic people like? Where did they come from? What influence did they have on the develop-

ment of history in the Mesopotamian valley? Have they any modern descendants?

These questions, all highly interesting since they are about the oldest civilized people in the world, are raised by Prof. E. A. Speiser of the University of Pennsylvania, and given at least a preliminary answer in a new book which has just been published by the press of his University.

To answer the questions one by one: The people of the Aeneolithic culture typified at Susa were a definite sub-race that was neither Semitic, Hamitic nor Indo-European. They may possibly have come from farther north, from the region between the Black and Caspian seas. They laid the foundations of the Mesopotamian cultures that later, with other racial additions, became known as Sumerian, Akkadian, Babylonian, Assyrian. Their descendants are still in the lands of their ancestors, though now naturally of mixed blood for the most part. The wide-headed, serious-minded, frequently quarrelsome Kurds are perhaps the most like the ancient ancestral stock.

When Professor Speiser began to be convinced that in this hill country of the Aeneolithic background he was dealing with a number of peoples who belonged basically to a single stock, descended in all likelihood from a single ancestral tribe, he was a bit put to it for a convenient name to give them. Two of Noah's sons had been called on to father two great racial stocks. Ham, with a not-too-dark skin, gave his name to the Egyptians and other white peoples of Africa; Shem (written "Sem" in the Latin) was the patron of the Semites—Jews, Arabs, and other peoples of the Arabian peninsula, thrust in like a small continent between Asia and Africa. The vast complex of white races in Europe and southern Asia have been rather vaguely lumped as Indo-Europeans.

But this ancient group, to which the original population of Crete and of

Greece also belongs, this first bearer of the lamp of civilization, was not to be identified with any of these three. Several names had been suggested. "Armenoid" was one, but that made a modern people the godfathers of an ancient one; and it is not certain that the Armenians are as full-blooded descendants of this ancient race as are some of their neighbors—their old enemies the Kurds, for example. "Caucasian" was another suggested name, because of the putative homeland in the Caucasus region, but that title has been loosely used for all Europeans—even for all white men of every description.

Named for Noah's Third Son

A Russian ethnologist named Marr had used the name "Japhethite," drafting the third son of Noah, and this name Prof. Speiser adopted, though with several important modifications. "Japhethites," therefore, these earliest of civilized men are. Japheth has waited longest for his sons, but at last has received the highest honors.

The domain of these Japhethites, so far as it has been studied in detail up to the present, stretches along the hill country from eastern Asia Minor down to the Persian Gulf. The extensions beyond are still sufficiently known.



A YOUNG MOTHER

In the world's oldest country. Her children, like their ancestors for thousands of years, will be noted for their remarkable strength and endurance.

Of Elam at least we are sure. It lay near the head of the Persian Gulf, with Susa, its capital and the metropolis of the Aeneolithic world, nestling at the foot of the Zagros mountains. Diggings in Susa have brought up some of the most beautiful pottery ever made in all the world's history. Susa must have been the Sevres of ancient Asia.

Singularly enough, the pottery found in the lowermost of the two oldest strata in Susa (called Susa I for convenience) is of notably better texture and more artistic decoration than the pottery from Susa II, immediately above it. This is significant: the oldest Susa was already a highly civilized city; its culture was far enough along in years so that a decadence could set in. The beginning of the cycle of civilization thus indicated has not yet been found. Susa is probably the oldest city in the world that we know anything about, but there may be an older city somewhere else, still waiting for the archaeologist's spade.

From Elam, bearing the culture stamped with the mark of Susa, went the first settlers in the lower Mesopotamian valley. At least they were the first we know anything about. For in the recent digs at Ur, the oldest of the Euphratian cities, the excavators went right on through the thick layer of sterile mud that impressively recorded the reality of an extensive deluge of about 3500 B.C., which may perhaps be the Flood of the Bible; beneath it they found abundant relics of human occupation. Most abundant were the masses of broken painted pottery, all of it of the Susa type.

A New People After the Deluge

After the Deluge the region was no longer Elamitic in character. A new people appears on the scene, the Sumerians. Where the Sumerians, the Greeks of the Ancient East, came from, nobody seems to know. Archaeologists point vaguely in the direction of the Persian Gulf, but do not answer many questions. However, these people were certainly not Elamites, and also not Japhethites. They may possibly have been a preliminary wave of the great Mongoloid racial movements of later history which brought into Europe and Nearer Asia such peoples as the Huns, Tartars and Turks. But any opinion is at present a guess.

Farther upstream, the old pre-diluvian Japhethic population was possibly conquered, possibly infiltrated, by Semites from the desert and grasslands to the west, to form the group of city-



SUSA FELL BEFORE A FOREIGN KING

The conqueror ruled over the city for a while, then set up a monument with a picture of his triumph in battle and a bragging inscription to tell the world about it.

kingdoms known as Akkad. Its dominating city eventually came to be Babylon.

The states of Sumer, Akkad and Elam fought each other like Kilkenny cats for many long centuries, back there about 3000 B.C. Sometimes one gained the upper hand, sometimes the other. The conqueror bragged about his successes on inscribed bricks. If he failed he usually said nothing.

But even after Babylon had eaten up all the other city-states and founded a great empire on the two rivers, the influence of the old Aeneolithic culture that had radiated from Susa still governed the lives of the new peoples, regulated their worship of the gods, even set the fashion of their beards. For as Sumer had learned much from Elam, so Babylon learned from Sumer. A people may vanish or be blent beyond recognition, but its traditions and modes of life hang on when even its gods are ghosts.

That other great people of the Mesopotamian region with whom we became

familiar in Sunday-school days, the Assyrians, also were the recipients of Japhethic culture, very likely of some of the racial blood. They got a later start than the Babylonians, for their nuclear city, Ashur, was held back for a long time by the proximity of a warlike kingdom of Japhethic aliens, the Hurri-Mittanni. But when they did get going they became the Romans of the Near East: ruthlessly ambitious, full of military genius, remorselessly cruel to anybody who opposed them. They were more like modern Kurds (when the latter are on a rampage) than they were like any other historic people of the region. The Assyrians represent a fusion of Semites and Japhethites, as do also the Jews. An Indo-European addition to the original Japhethite population of Asia Minor produced the Hittites, a mighty people of old, whose empire contended against both Egypt and Assyria, and clashed sometimes with the Kingdom of Israel.

Of the several other peoples besides the Elamites who (Turn to page 382)

GEOPHYSICS

New Hot Spring Breaks Out In Arkansas Park

A NEW hot spring came into existence at the Hot Springs National Park recently when workmen were cleaning out the old springs and installing new pipe lines.

While workmen were leveling off a trench to carry away the flow from one of the springs, a projection was found in the bottom of the trench which interfered with the proper level for the pipe. To remove the projection a laborer struck it about half a dozen times with a pick, and then a stream of hot water gushed into the trench. A new spring apparently had been born.

Dr. Hugh de Valin, park superintendent, states that this spring is one of the hottest in the park, and that it is expected to have a flow of from 50 to 60 gallons per minute. It will be included in the collecting system through which the hot waters are gathered for distribution.

Science News Letter, December 13, 1930

METEOROLOGY

History of 1930 Drought Told by Weather Chief

A PROLONGED stagnation of air over nearly the whole continental extent of the United States best explains the unprecedented drought of the past summer, Dr. C. F. Marvin, chief of the U. S. Weather Bureau, states in his annual report.

No conclusive or comprehensive explanation of such abnormal weather conditions has yet been discovered, however, nor has any means yet been perfected of predicting the approach of dry summers far in advance, in the opinion of the government weather authority. Some slight advances in long range forecasting have been made by means of correlations of weather statistics in different parts of the world and some measure of success may be obtained by observing changes in the temperature of the surface waters of the oceans but the Weather Bureau cannot be led away from sane and rational conservatism in these matters, he said.

Facts of the 1930 drought which was the severest in the climatological history of the central and eastern portions of the United States comprised the bulk of Dr. Marvin's report.

How hard the farmer was hit by the weather is strikingly brought out by the

data, based on the weather reports up to August 31. "Not a single State east of the Rocky Mountains had as much as normal precipitation for this period of the three principal growing months and some half dozen States had less than half the normal," the report said in part:

"The summer season was generally warm, with the period after the middle of July to middle of August having abnormally high temperatures, with the previous maximum records equalled or exceeded in many places. These unusually high temperatures greatly intensified the effect of the deficient moisture.

"The growing season, as a whole, March to August, was the driest of record over a large area, comprising the Middle Atlantic States and the Ohio and middle Mississippi Valleys."

Science News Letter, December 13, 1930

CHEMISTRY-NUTRITION

Animals Make Vitamin A From Color in Food

EVIDENCE that animals can manufacture the growth-promoting vitamin A in their bodies from carotin, the yellow coloring matter of some of their foods, has just been reported to the Medical Research Council by Dr. Thomas Moore of the Nutritional Laboratory in Cambridge, England. Dr. Moore's discovery reverses an earlier theory about vitamin A, that it is not made by the animal and that all of it comes from animal bodies and glands.

Vitamin A, besides promoting normal growth, increases resistance to disease. It is found in animal fats, such as butter and beef fat, in eggs, milk and vegetables. It has always been found together with this yellow pigment, carotin. The yellow of the egg, butter, yellow carrots, and yellow corn contain this vitamin. White corn, white carrots and white turnips, however, have very little vitamin A compared to the amount found in the yellow varieties. In green vegetables which contain this vitamin, carotin is also present but its color is hidden by the green color of chlorophyll which is abundant in such plants.

Not only do the two substances occur together but carotin has the same effect on growth and bodily vigor and health as vitamin A. Extracts of pure carotin can cure animals suffering from deficiency of vitamin A just as feeding the vitamin could cure them.

Science News Letter, December 13, 1930

IN SCIENCE

OCEANOGRAPHY

Hydrographic Office Celebrates Centenary

THE one hundredth anniversary of the U. S. Navy's Hydrographic Office, which has charge of issuing charts and maps on which the navigator depends, was celebrated Saturday, December 6, with a radio program in which Rear-Admiral Walter R. Gherardi, head of the office, and Secretary C. F. Adams spoke. Mr. Adams' great-grandfather, John Quincy Adams, when President, was one of the early advocates of the establishment of the office.

Captain Wilkes, one of the early hydrographers, made extensive explorations in the Antarctic, and his name is still attached to geographical features of that region. Another early hydrographer, Lieut. Matthew Fontaine Maury, made extensive ocean surveys which formed the basis of the modern charts. He also attained fame as an astronomer and was the first head of the Naval Observatory.

In recent years the Office has extended its activities to aviation, and now issues pilot charts.

Science News Letter, December 13, 1930

ARCHAEOLOGY

Skeletons of Notables Found in Prehistoric Grave

GRAVES of mysterious Tarascans, one of the prehistoric tribes of Mexico, have been found near Zacapu, Michoacan, by Alfonso Caso, of the Mexican National Museum.

The most remarkable of the tombs contains two skeletons believed to represent distinguished personages, perhaps a chief and his wife. The bones lay in a tall jar, 32 inches high and 26 inches across. The only decoration on this funeral jar is a red band about the neck. Accompanying the burial is an exquisite red and white polished pottery bowl with geometric design.

This tomb was found at the foot of a mound. The rocky pile is veiled with trees and vegetation, but is well known to natives of the region as the "Palace of Caltzontzin," last Tarascan king who still ruled in 1523.

Science News Letter, December 13, 1930

SCIENCE FIELDS

MEDICINE

Sugar-Coated Tablets May Be Menace to Children

ASERIOUS menace to young children lurks in the sugar-coated tablet and the pink pill when these contain strychnine, Dr. John Aikman of this city has warned in an address before the Rochester Pediatric Society.

The amount of strychnine in each tonic tablet or cathartic pill is not very large. It will not harm the adult for whom the tablets and pills are intended. However, these colored, sugar-coated pills are attractive to small children, much as candy is. Frequent cases of convulsions and death in children under five have been traced to eating large numbers of such tablets unobserved by parents or nurses. The finding of the empty or half-empty bottle later has give the clue to the cause of the child's illness.

"The aggregate amount of strychnine or other poisons thus put in the hands of patients may be surprisingly large," Dr. Aikman said, commenting on the fact that tonic tablets containing strychnine have become household remedies and cathartic tablets have even a more general use.

He suggested that a poison label should be required by law for all containers of drugs having even a small amount of strychnine.

Science News Letter, December 13, 1930

ECONOMICS

Funeral Costs Increase While Funerals Decrease

FUNERALS have been growing fewer each year, as a result of efforts by physicians and health officers to save and lengthen human lives. At the same time, the funeral industry itself has expanded greatly.

The result of this expansion in the face of a decreasing demand has been reflected in the costs of funerals to the public, John C. Gebhart has just reported to the Committee on the Costs of Medical Care, after a two-year survey of the subject.

"The burial industry is unique," the report stated. "It is probably the only industry in which the demand is fixed by natural causes. It is obvious that no amount of advertising or sales efforts can increase the demand for funerals.

"Moreover, the business is by no means evenly distributed among undertakers. It was found that in New York City 8 per cent. of the undertakers handle 44 per cent. of the business. The balance, 92 per cent., have 25 funerals a year and are therefore trying to make a living out of two funerals a month. The marginal undertaker is, therefore, an important factor in the problem of high funeral costs. The smaller firms are obliged to charge more than the larger ones.

"It is apparent that funeral prices cannot be greatly lowered until the volume of business, which is fixed by the death rate, is concentrated in fewer hands. This applies both to funeral directors and to manufacturers of burial goods."

Another factor influencing the cost of funerals is the desire on the part of the family for an elaborate funeral either as a token of respect and affection or to satisfy social or religious conventions and traditions.

"In general, funeral charges are highest in the East and lowest in the South, with the mid-western and central states falling between these extremes," said Mr. Gebhart of the geographical situation. "In towns under 10,000 in population, funeral expenses average \$241; in cities of from 10,000 to 250,000 they average \$270, and in cities of over 250,000 they average \$336.

Science News Letter, December 13, 1930

CHEMISTRY

New Grain Fumigant Eliminates Fire Hazard

DEVELOPMENT of a new method of fumigating grain in storage without incurring a fire hazard is an outstanding achievement of government scientists during the past year, Dr. C. L. Marlatt, chief of the Bureau of Entomology of the Department of Agriculture, reveals in his annual report.

The new fumigant is a mixture of solid carbon dioxide or "dry ice" and ethylene oxide. Tests by commercial handlers of grains have proved the value of the method, which is economical and superior to the more familiar carbon disulphide treatment of grain, due to its non-inflammability.

Science News Letter, December 13, 1930

PSYCHOLOGY

Disobedience a Stage Of Normal Growth

IF SONNY suddenly changes at about the age of 2½ from a model of willing compliance to a strange creature shouting no's and I-don't-wanna's, you may find consolation in a report submitted by Prof. K. M. Banham Bridges, of McGill University, to the Western Psychological Association. He considers such a change a normal one in the growth of children.

Prof. Bridges has made a three-year study of nursery school children. He describes four distinct phases of development in the child's relations with adults, which he observed during that time. Under the age of two, the typical child is very dependent on his elders. Between two and two and a half, he becomes increasingly independent. At about two and a half, he adopts an attitude appropriately described by psychologists with the word "negativism," which lasts until he is about four. After four, he may be expected to learn how to cooperate with others without sacrificing his newly acquired manly independence.

Science News Letter, December 13, 1930

ROENTGENOLOGY

Describes X-Rays As Beauty Aid

THE role played by X-rays in preserving or restoring milady's beauty was described by Dr. Benjamin H. Sherman of Hollywood, Calif., at the meeting in Los Angeles last week of the Radiological Society of North America. Nor is masculine pulchritude neglected in this field of radiology.

"Burns about the mouth, eyelids, nose, neck, etc., may completely change the patient's looks or expression, generally to his detriment," Dr. Sherman said. The same is true of defacing scars which often result from accidents.

The removal of these is now possible through the use of X-rays and radium. Men and women otherwise possibly defaced for life by accidents may hope for recovery of lost bodily beauty, he said.

Some injuries, however, leave marks that baffle all efforts at removal. Best results are obtained in the case of keloids. This word is derived from a Greek word meaning clawlike. Keloids extend over healthy tissues beyond the borders of the scar.

Science News Letter, December 13, 1930



A Sabre-tooth tiger skull from the asphalt trap. This cat, about the size of a lion, could drop its lower jaws and stab a victim with its great tusks.

In the great numbers of kinds of beasts and birds entombed in the asphalt pools a large percentage are of types no longer living on any part of the earth. Many of these have their nearest relations in the life of still earlier ages. Such are the sabre-tooth, mastodon, ground-sloth and others. The elephant, camel, and horse, have close relatives living today on other continents. With these two groups are other species, as the coyote and puma, the rodents, many birds, and plants like oak and cypress that have intimate resemblance to species at home in California today. If the whole group of animals and plants from these pools could stand before us, the assemblage would be that of a foreign age or land, but among them would be many friends of our out-of-doors today. Here we face the reality of another world of life shown in many strange phases, and yet the beginning of the present reaches back to overlap that early time.—John C. Merriam in *The Living Past*, 1930.

DEATH TRAP OF THE AGES, by John C. Merriam, in *SUNSET*, Vol. XXI, No. 6, October, 1908.

A FEW miles west of the city of Los Angeles, there is situated an extensive deposit of asphalt which has been largely quarried for commercial purposes. It has been known for many years that certain portions of the asphalt contain large numbers of bones; and skeletons were found to be so numerous

in some places, that in quarrying it was not profitable to attempt the separation of asphalt from the layers in which they occurred. The bones appeared so fresh and well-preserved, and were so near the surface of the ground, that there seemed to be little reason for considering them as other than the remains of domestic cattle, sheep, horses, dogs, and other animals, and the attention of investigators interested in prehistoric life was not attracted to them. Only very recently has it become known that the skeletons present in such numbers represent many strange, extinct animals which lived in an earlier geological period, and that the asphalt beds at this locality form one of the most remarkable accumulations of prehistoric remains in the world.

The asphalt deposit lies in an open space between two groups of derricks marking important oil belts immediately to the north and south. In this area almost pure asphaltum forms the surface of the ground, or is only a short distance below it, over about a quarter of a square mile. Other deposits extending interruptedly to the east, and reaching well within the thickly settled portion of the city, would probably add not less than half a square mile to this area. At numerous points bitumen has recently been oozing out over the surface, outbreaks of this nature occurring in many places as puddles connected

with little crater-like vents. Near the middle of the area is a lake or pond bordered by quagmires of soft asphaltum. The water of the pond is heavily loaded with oil and tar, and through it great gas bubbles several feet in diameter are constantly rising with a loud splash.

Extent of the Deposit

According to the geologists who have most carefully studied the asphaltum beds of this region, they are located immediately over a sharp fold in strata which have been heavily impregnated with petroleum. At the summit of the fold the strata have been broken up to some extent, and for a long period small quantities of oil and gas have been seeping out and passing to the surface. As the oil passed upward, the lighter portions disappeared through evaporation, and the residue formed tar springs and pools. In the course of time, the tar has dried and hardened locally to the consistency of asphalt. This accumulation continued until the great deposit exposed here had been formed. What the actual thickness of the beds is has never been determined, but the bottom is not reached in quarrying to a depth of fifteen feet.

Scattered Bones and Teeth

In many places where the asphalt comes to the surface, scattered pieces of bones and teeth are seen in it. Where

Fossils

from

Rancho La Brea

"A Classic of Science"

Victims of Asphalt Quagmire Link Present With Prehistoric Past

cuts have been made in quarrying, some sections show bones scattered irregularly through them. In other places certain layers will be found nearly barren of remains, while other fairly defined strata show a mingled mass of bones, and pieces of partly lignitized wood in a matrix of pure asphalt.

The skeletons are all remarkably fresh and well preserved, and excepting a deep discoloration by the asphaltum, they are hardly to be distinguished from those of animals recently killed. In cases where the fossils are exposed on the surface they may be mixed with bones of modern sheep, cattle and horses; and it is not remarkable that all were at first considered to be of recent origin.

In the collections that have been made in the asphaltum up to this time, quite a variety of creatures are represented, of which the great majority are mammals and birds. Of birds there are many kinds, among which ducks, geese, pelicans, and eagles and condors are recognized. The smaller mammals include mice, rabbits and squirrels. The larger members of the mammalia are represented by extinct species of coyotes, gigantic wolves, bears, sabre-tooth tigers, horses, bison, deer, camels, elephants and large sloths of an extinct group. Beetles and centipedes have also been found, and doubtless many other animal forms are there, but have not yet been recognized.

Two Extinct Wolves

One of the most common animals in the asphalt is a large wolf, one of the largest members of the true dog family known among either living or extinct species. Associated with it, though relatively rare, is a smaller wolf closely related to the existing coyotes. The large species is possibly represented outside of this state by a few fossil teeth found in Indiana and Texas. From the asphalt beds more than fifty good skulls with parts of many other skeletons have been obtained. Bones of the large wolf are much more common than those of the smaller one, and it is probably fair to assume that it was a more abundant animal than the coyote in this region at the time the beds were accumulating. Judging from the great number of remains found it certainly must have been very common in this region. The great wolf differs from all of our existing species in its larger and heavier skull and jaws, and in its mas-

sive teeth. Judging from the form of its skeleton it was less agile, and not so swift-footed as the coyotes.

The Sabre-Tooth Tiger

Next to the large wolves the carnivorous animals most frequently discovered are the sabre-tooth tigers, of which thus far excellent material of over twenty individuals has been found. Though fossil cats of this group are known from nearly all parts of the world, and the type has been in existence for many geological periods, there has never before been found such a remarkable accumulation of their remains as occurs here. In all parts of the beds where collections have been made their bones are represented. At one locality eighteen

tirely inappropriate for them. The teeth of the ground-sloth indicate that they fed upon plants. Their feet were provided with very large and powerful claws, which were evidently used in digging or scratching for food.

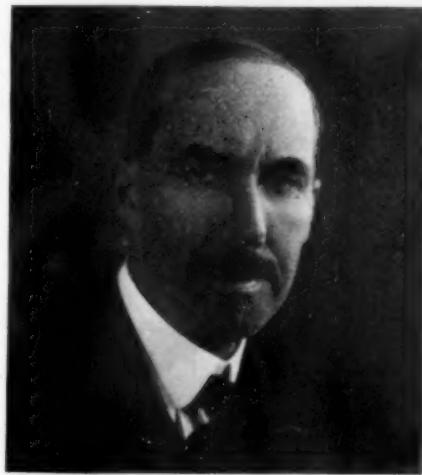
The ground-sloth remains found in the asphalt consist of many parts of the skeleton, including feet with the enormous digging claws, and skulls with the teeth. In some instances nearly the whole of the skeleton has evidently been buried in the asphalt, but a portion of it has afterward been exposed and destroyed. . .

Bison, Camels and Mammoth

Of the hooved, herbivorous animals found in the asphalt beds, extinct species of horse and bison are the most common. Occurring less frequently are camels, deer, goats, a small and previously unknown deer-like animal, and the mammoth. Nearly all of the horses are young animals, and the bison are usually represented by calves. The horses belong to a species much like the modern type. The bison were heavy-horned species, somewhat larger than the existing American buffalo. Of the mammoth only portions of the tusks and limb-bones have thus far been found.

The bones of the birds are very common and are mingled with those of the other animals, particularly the carnivora. Of beetles, the wing covers and even the whole bodies are found, and with them are occasional remains of centipedes, and the bones of various rodents.

From the occurrence of so many peculiar intermingled animal remains, in which the proportion of carnivorous animals and of young ones is relatively large, it may be judged that the accumulation of bones found here has taken place under conditions materially different from those under which bone deposits have commonly formed. In most instances fossil bone beds represent the natural collection of remains by stream wash, or simply the dust-covered skeletons accumulating on open plains. In such cases most classes of animals are represented among the skeletons in somewhere near the proportion which they bore to the other forms of life. In the asphalt beds the percentage of carnivora and of young animals appears much larger than it could have been in any normally balanced fauna, and there must have been some extraordinary reason for the presence of these classes in such relative abundance. (Turn page)



DR. JOHN C. MERRIAM
President of the Carnegie Institution of Washington.

complete skulls, and at least one complete skeleton, were found within an area of less than two square yards. . . .

The Giant Ground-Sloth

Another animal found frequently in the asphalt beds is the ground sloth, a peculiar creature, related on the one side to the living South American sloths, and on the other side to the armadillos. No representative of the group is known among the existing animals of the world, and most of the extinct representatives known are from South America, where they were abundant for a long period. The ground-sloths were much larger than their living cousins, some of them attaining the size of a large ox, and certain South American forms were even larger. They were powerfully built, and the designation sloth is evidently not en-

The asphalt deposits as a whole have evidently formed from the slow accumulation of bituminous material around tar springs. Springs of this kind, such as are in existence at the present time in this region and elsewhere, generally send out a great deal of water with the bituminous material, the tar accumulating on the floor and around the margins of ponds of water. After a time the tar accumulates in such a quantity that it may of itself form a large pool. With evaporation of the more volatile materials the bitumen gradually hardens, but in warm weather the surface is always soft and sticky, and when the mass has accumulated to a sufficient extent it may flow and spread for a considerable distance.

In all stages of the accumulation of asphalt the gummy surface presented to the atmosphere acts as a trap for unwary animals. Where pools of water are present, water birds of all kinds are caught in the soft tar about the margins of the ponds. When once the wing feathers are smeared over the birds are helpless, and in attempting to wade out to dry land they are hopelessly mired. Land birds and mammals in smaller numbers are caught in attempting to reach the water, while insects and other tiny creatures are snared. . . .

The fauna of the asphalt beds of Los Angeles so far as most of the types of animals are concerned, corresponds very well with what is found in the tar deposits at the present day. Of the birds a large percentage are water forms, and of the larger herbivorous mammals nearly all are young animals, like the colts and calves caught in recent times. The large number of car-

nivora present also corresponds with what is noticed around recent asphalt pools, where unwary cats and dogs are only too frequently lost in attempting to reach struggling birds or small mammals that have previously been caught in the tar.

There seems, then, to be every reason to believe that the Los Angeles asphalt deposit with its great freight of bones has been formed in a past geological period, much as the deposits are being made about tar springs at the present day. The peculiar ducks and pelicans and condors, the young camels, bison, horses, and deer, with the mammoth and the ground-sloth, have sunk in the pitch, and in their struggles have enticed the wolves, bears and the sabre-tooth cats. Sometimes a single struggling animal may have attracted several wolves or tigers, and around its body a combat was carried on which ended in both the victor and the vanquished being swallowed in the tar. In other cases the presence of several puppies or kittens together with an adult of middle age leads one to suspect that a young litter has broken loose to fling itself upon some mired bird or mammal and has been trapped together with the mother which came to their aid.

The accumulation of the asphalt beds has probably gone on slowly for a long period. Sometimes it ceased entirely. At times conditions were such that few if any animals were trapped. At other periods a great variety of creatures was caught in such numbers that their bones were matted together in thick beds, which we now recognize as strata in an ancient geological formation.

Science News Letter, December 13, 1930

MEDICINE

Cancer-Causing Substances Flash Own Danger Signal

A PECULIAR blue-violet fluorescence may provide a test for cancer-producing compounds.

This new weapon in the investigation of artificial cancers is due to Dr. W. V. Mayneord and I. Hieger, two scientists at the Cancer Hospital Research Institute in London. They find that when substances known to cause cancer in mice, are illuminated with a beam of ultraviolet light a blue spectrum appears.

The existence of such substances

was first discovered because the employees in the shale oil and coal-tar industries were found to be particularly susceptible to the disease. Later it appeared that cancer may be produced artificially by prolonged contact with many tar-like liquids obtained by heating common substances—for instance, skin, muscle and hair—to the temperature at which iron begins to glow dull-red. The workers of this laboratory have recently shown that a similarly harmful substance may be obtained at low tempera-



THE ONLY KING PENGUIN

Ever hatched in captivity chipped its shell a while ago in the great Carl Hagenbeck private zoo at Stellingen, Germany. Since the above photograph was made the chick has become an orphan; its father died and its mother deserted it. Devoted keepers keep it fed with fish, and it has grown to almost adult size.

tures by the action of aluminum chloride on tetra-hydro naphthalene—a commercial coal tar product used in the dye industry.

It was this condensation product which has recently been found to give the blue fluorescence. A search is now being made for other compounds of known constitution which show the same property. This has been successful in that several compounds related to benzanthracene have been shown to give a similar spectrum and also to be cancer-producing. Benzanthracene is built up of four benzene rings cemented together. It is believed that substances in coal tar which predispose to cancer are similar in nature.

While not all cancer-producing substances show this spectrum and while some which do show the spectrum do not cause cancers, the new test is likely to be of assistance in uncovering the origin of cancers which develop spontaneously.

Science News Letter, December 13, 1930

Experiments at the Bureau of Standards indicate that actors or talking movies must "speak louder" in a theater in the winter time, because the quality of winter clothing worn by the audience absorbs more sound than summer clothing.

RADIO

Prepare to Broadcast Sound With Television Programs

Federal Radio Commission Urged By Engineers To Allow Use of Very Short Wavelengths For Experiments

TELEVISION will now be able to follow the movies and "go sound" if recommendations made by leading television engineers are adopted by the Federal Radio Commission. The Commission asked the views of those who are now putting sight as well as hearing into radio.

Until now most of the lookers-in, who are equipped with televisions and can get the signals from one or more of the eight stations that are regularly putting such programs on the air, have enjoyed silent pictures only. In a few cases, special authority has been granted broadcasters to use a general experimental wave length for simultaneous sound broadcasting, and others have been sending out the sound through a regular broadcasting station when the sound part had entertainment value by itself.

Channels Now Used

The present television broadcasting channels are 100 kilocycles wide, ten times the width of those used for sound broadcasting. It had been suggested that part of the television bands be set aside for simultaneous sound, but this idea was not favored by the broadcasters. It was decided, however, that the Commission should allow television stations to use part of their bands for the purpose. Since future development may require even wider bands, it was also decided that a separate frequency, or wavelength, should be made available over which the television picture could speak.

One possible solution of the problem as to how enough space in the radio spectrum can be provided for adequate television seems to be the use of waves far shorter than any that are now used ordinarily. The television broadcasters urged that several bands of these very short, ultra-high frequency bands should be assigned for television. The bands selected, as not yet being otherwise assigned, are from 43,000 to 46,000 kilocycles, 48,500 to 50,300 kilocycles and 60,000 to 80,000 kilocycles. In wavelength, these are around six meters,

which corresponds to 50,000 kilocycles. The present television bands are between 2000 and 3000 kilocycles.

In order to prevent stations from interfering with each other the broadcasters also recommend that stations should not be allowed to operate at the same time within the same channel if less than 150 miles apart, except by mutual agreement. As some stations do not use the full band of 100 kilocycles, by arrangement among themselves the stations will be allowed to use different parts of the same band if they make mutually satisfactory arrangements.

In spite of the technical advances made, television is still very much experimental. This is the general opinion of those broadcasting. C. W. Horn,

ASTRONOMY

Six of Shaw's Universe Makers In List of Great Astronomers

SIX of the eight "universe makers" named recently by George Bernard Shaw are included in a list of the ten greatest astronomers proposed by Dr. Frederick C. Leonard, professor of astronomy at the University of California at Los Angeles. Prof. Leonard's list was made several months ago at the request of university officials who wanted to place the names on a new building. The list is published in the current issue of *Popular Astronomy*.

Listed in what Prof. Leonard terms "the order of decreasing greatness," the ten are as follows: Sir Isaac Newton, Nicolas Copernicus, Galileo Galilei, Johann Kepler, Albert Einstein, Hipparchus, Sir William Herschel, Gustav Robert Kirchhoff, Claudius Ptolemy and Tycho Brahe. Prof. Leonard confesses to some doubt "concerning the 'order of merit' in a few cases, but not much regarding who the ten are."

Shaw included all of these names except Hipparchus, Herschel, Kirchhoff

general engineer of the National Broadcasting Co., expressed this viewpoint when he declared that "the amateur cannot be considered at present, and, except in small areas around a station, it is impossible to guarantee any regular service."

Science News Letter, December 13, 1930

ROENTGENOLOGY

X-Rays Before Operation Do Not Delay Healing

WHEN tissues are exposed to X-rays before an operation there is no delay in the healing of the wounds in those tissues if the operation is done within a month after the irradiation. When wounds are exposed to X-rays after the operation, the healing of the wounds is delayed, Drs. E. A. Pohle, G. Ritchie and O. S. Wright of Madison Wis., reported to the Radiological Society of North America at its meeting in Los Angeles last week.

These results were obtained in studies on white rats. They should help to banish the public fear of X-ray treatment which is given before operation, the investigators felt.

Science News Letter, December 13, 1930

and Tycho, and, in addition, named Pythagoras and Aristotle, neither of whom were, strictly speaking, astronomers. Hipparchus was a Greek who introduced the system that Ptolemy made popular and which was known as the Ptolemaic system. Herschel was the first astronomer to design and use large telescopes, and to study the universe of stars rather than merely the solar system. Kirchhoff was the founder of spectrum analysis, which has revealed so many facts about the stars. Tycho was the last, and greatest, of the pretelescopic astronomers, who made the observations that were applied by Kepler in formulating his laws of planetary motion.

Defending his choice of such men as Newton and Einstein, physicists rather than astronomers, Prof. Leonard says that by an astronomer he means a person who has contributed to the advancement of astronomy, regardless of what his vocation may have been.

Science News Letter, December 13, 1930

Oldest City on Earth

(Continued from page 375)

made up the Japhethite stock, one may be singled out for brief mention because of a strange misconception that has grown up about it, which Prof. Speiser is the first to explode. This was the tribe known as the Guti. When the Babylonian and Assyrian kingdoms became well established in the valley and the wealthier people could afford servants, a lively slave trade sprang up. Gutians from these hills were in great demand, because they were so healthy and strong. Kurdish porters in the same region today amaze visitors with their ability to carry horse-size loads.

Several written contracts with slave-dealers have been discovered and interpreted. They specify the kind of slave wanted, and add that he or she must be "namru." Earlier philologists tried to puzzle out what kind of a person a "namru" slave might be. An older meaning of the word, they found, was "bright." Hence they jumped at the conclusion that "namru" meant blond. Thereupon, borne on the shoulders of a few slaves, the whole myth of the Noble Nordic invaded ancient Assyria.

Prof. Speiser has re-examined this

"namru" business very carefully, and cannot find that the word has any meaning other than strong, healthy, or in good condition. It is rather difficult to see why a hard-boiled Assyrian slave-dealer should have preferred blonds, any more than did his nineteenth century successor, Simon Legree.

As for the probable modern descendants of these same hill people of six or seven thousand years ago, Prof. Speiser points strongly at the Kurds, Lurs and their relatives. The Guti, he says, were also known in antiquity as Qutians. In connection with the latter name a slightly modified form, Qurti, appears in some of the records; whether as a neighboring and related tribe or simply as a variant of the name Qutians. In later years, Xenophon speaks of the Carduchi, other Greek writers of the Kurtioi. All these spellings and pronunciations fall around the modern "Kurd," like shots around a bull's-eye. There is little doubt, Professor Speiser concludes, that "Guti" has become "Kurd," and that the Kurds are the offspring of the Guti.

This gives us living samples of the ancient stock for physical anthropologists to measure and photograph. But, cautions Prof. Speiser, there are Kurds and Kurds. The stock has become considerably mixed where they have come into contact with outsiders. The best chances, he thinks, are to be found in isolated communities in the hills, where there has been little traffic all through the centuries. Here a reasonably close inbreeding will have kept intact the stock of the ancient Japhethite people, who first taught men how to dwell together in cities.

Science News Letter, December 13, 1930

March's Thesaurus Dictionary

Finds the word you have forgotten, and defines it. See full description in full page advertisement, issue of November 8, 1930.

Write for "Three Men and a Book," an entertaining little booklet showing the advantage of March.

Historical Publishing Co.
Dept. SCX, 1334 Cherry St., Phila., Pa.

**KEEP ABREAST
IN YOUR SUBJECT**
◆
**EARN CREDIT
TOWARD A DEGREE**

While teaching, use the

HOME STUDY

courses for **Teachers** in Rural, Primary, Grade and High Schools—or for **Supervisors** and **Principals**, which the University gives by **correspondence**. 450 courses in 45 subjects yield credit toward either a Bachelor's degree or Teaching Certificate.

Write for booklet giving full information.

The University of Chicago
577 Ellis Hall
Chicago

PALEONTOLOGY Alaskan 'Prehistoric Animal' Declared Merely Whale

THE supposed "prehistoric animal" reported to have been discovered preserved in ice in Alaska is almost certainly a whale. Dr. Barnum Brown of the American Museum of Natural History, New York, has advised Science Service that the reported presence of flippers and the dimensions of the skull indicate the carcass is that of the familiar mammal of the sea. Scientists of the U. S. National Museum, Washington, also express the same opinion.

Science News Letter, December 13, 1930

It is estimated that there are two million child slaves in China.

BOTANY

Nature Ramblings

By FRANK THONE



Teazel Pods

ON walks along autumn roads and across dry pastures you have no doubt seen them; tall, hard-looking, stiff brown weeds, with a few of their harsh, dried leaves still clinging to their rigid stalks, and each stem crowned with a thing that looks like a miniature porcupine—a big bur-like affair radiating long, hook-ended bristles.

This is the teazel, a sturdy vegetable outlaw that has wandered into this country from its native home in Europe and is becoming increasingly established in waste lands. They are interesting, and not wholly unattractive, when viewed at a little distance, but if one endeavors to walk through a teazel patch wearing woolen garments, the innumerable little hooks can make themselves a pretty bad nuisance.

Their ready tenaciousness was once a virtue in the teazel heads, for the ancient and honorable guild of fullers, who dressed and finished cloth after weavers had woven it, used teazels in large quantities, nailed to wooden rollers, to raise the nap on woolen fabrics. Of recent years this work has been stolen from the teazel by machines using brass spring wires, but there are still a few woolen mills where teazel frames have not wholly passed out of use. Occasionally one finds their broken bristles buried in cloth.

There are also a few teazel farms of a few acres each where the yearly crop is harvested, one stalk at a time, with scissors or knives. The demand for teazels diminishes year by year, at least relatively to the great growth of the weaving industry. But as their useful life diminishes they are apparently being pensioned off as ornaments; for gilded and painted teazel heads are now popular as parts of winter bouquets.

Science News Letter, December 13, 1930

METEOROLOGY

Expert Discusses Probable Causes of Fog Deaths

ACKING detailed reports of the symptoms shown by the people who died in Belgium as the result of a supposedly poisonous fog, scientists in this country are unable to assign a probable cause to the disaster.

Fogs at this time of year in southern England, especially around London, and the low countries across the Channel, are not uncommon.

Dr. W. J. Humphreys, meteorological physicist of the U. S. Weather Bureau, expressed the belief that reports of suffocation being due to fog alone were exaggerated, and that the deaths were the result of chills suffered after being wet in a cold, damp fog.

He quoted a Scotch proverb, "Whoever would have a bad day should go into fog after a frost," as expressing this view. Still another possibility, he mentioned, is the pogonip, the fog consisting of fine ice particles that has sometimes been reported from the western mountain states. According to reports, these ice particles get into the lungs and produce a very severe inflammation, with almost immediate death in most cases. However, Dr. Humphreys expressed doubt as to the accuracy of such reports, and declared that much of the supposed information about the pogonip was really fancy.

No fog alone could produce death by suffocation, he stated. A fog contains very small amounts of water, as it has been determined by a study of the Grand Banks that a block of very dense fog 100 feet long by 6 feet high and 3 feet wide contains only about a seventh of a glass of water—enough for one good swallow. This is divided into about sixty billion separate droplets of water.

If the deaths were caused by suffocation, it must have been by some poison gas, he believes. It might have come from some factory, producing the gas, or from a cache of wartime gas. Some poison gases are hygroscopic, he said, that is, they easily combine with water, and so would be absorbed by the droplets of the fog, which would thus help disseminate it. He emphasized, however, that one can now do no more than guess at the cause, until further technical details are available.

If the gas came from some industrial source, it might be largely carbon monoxide, according to one suggestion that has been made. This is formed by burning any fuel without enough oxygen for complete burning to carbon dioxide. Carbon monoxide seldom causes death in the open air, but despite the fact that carbon monoxide is slightly lighter than air, the peculiar atmospheric conditions may have caused unusual concentrations in the region affected.

One suggestion at first was that the gas might have come from a zinc factory in the neighborhood, but it was found that this plant had been closed for some months. But it may have been that the dump at this plant contained large amounts of arsenic, which often occurs as an impurity in zinc. By bacterial action, it is barely possible, this might have been changed to a poisonous gas.

Science News Letter, December 13, 1930

GEOPHYSICS

Mt. Lassen Steam Vents Changing Form and Location

STEAM vents that change not only their form but their location are a frequent occurrence in Lassen Volcanic National Park, California, an area that contains the only volcano on the United States mainland that is known to be semi-active.

Two outstanding examples of such change occurred recently. The vent known as the "Big Steamer" in the Sulphur Works area became plugged with mud and debris. This resulted in an increase of steam and pressure beneath, which caused it to blow up and scatter mud a distance of 40 feet around the vent. Now it is a large boiling spring, having changed its form after the explosion and in addition migrated several feet to the west.

Another large steam vent in the southeastern end of the Devil's Kitchen has become a boiling pool about 10 feet in diameter. It now boils constantly, raising the main body of water to a height of four or five feet and occasionally sending jets up to a height of 10 feet.

Science News Letter, December 13, 1930



No. 5864-5868

Our telescope catalog describes many other types of telescopes up to 4½". Write for Catalog N-L.

Catalog No.	5864	5866	5868
Diameter of object lens	1 ½"	2"	2 ¼"
Length closed	15 ½"	24 4/5"	30"
Length extended	29 ¼"	34"	42"
Magnification astronomical	50X	60X	80X
Magnification terrestrial	25X	35X	45X
Price	\$40.00	\$55.00	\$80.00

Astronomical Telescopes

The instrument illustrated is a small stand type of first quality optical and mechanical construction.

It reveals certain details of the moon; its geography, craters, seas, mountains, etc. It also reveals the planets, including Saturn and its ring formation, also the phases of Venus.

PALO COMPANY
BIRD GLASSES MICROSCOPES PRISM BINOCULARS MAGNIFIERS
153 WEST 23rd STREET NEW YORK, N. Y.

•First Glances at New Books

Nutrition

NUTRITION AND FOOD CHEMISTRY—Bernard S. Bronson—*Wiley*, 467 p., \$3.75. The book is written for college students but is not too technical for general reading. It goes more deeply into the subject than the usual run of popular books on the subject, but may be the more interesting for that reason. The author aptly states: "The number of animals that know how to eat is large; the number of men that know this is small. If a man ever knew, it was long ago, and he has forgotten now." However, this should not be mistaken for the introduction to a new food fad, for it is not. The author presents the scientific facts and has no ax to grind.

Science News Letter, December 13, 1930

Chemistry-Economics

NATURAL GAS—J. C. Youngberg—*Schwacher-Frey*, 185 p. \$2.50. Across the face of the United States, in many cases paralleling other channels of transportation, there are pipelines for the conveying of natural gas, a product that is the commodity of a rapidly expanding industry. Financial as well as historical and technical data on natural gas are included in this volume.

Science News Letter, December 13, 1930

Aeronautics

THE AIR-TOURIST'S GUIDE TO EUROPE—Capt. Norman Macmillan—*Washburn*, 276 p., \$3. European tourists who like air travel will wish to put this guide in their luggage when next starting for Europe.

Science News Letter, December 13, 1930

Mathematical Tables

ADDITION-SUBTRACTION LOGARITHMS—L. M. Berkeley—*White Book and Supply Co.*, 135 p., \$3.25. Addition and subtraction logarithms are not new, for Gauss made the first table of them, following their invention by Leonelli. But until now tables have not been common, Desvallées being one of the few in general use. With this new table a useful innovation is introduced by having the addition logarithms in one column serve as the argument for the subtraction logs. in the next, thus saving space, and combining the two tables, ordinarily given separately. The values are given to five decimals. They are not arranged as in the ordinary log. tables, but in parallel columns of argument and values. The advantage of

these logs, is that in extended computation the logarithm of the sum, or difference, of two numbers may be obtained by adding the addition, or subtracting the subtraction, logarithm to or from the larger of the logs of the numbers. The addition or subtraction log. is found in the table from the difference of the logs. of the numbers as argument.

Science News Letter, December 13, 1930

History-Archaeology

ANCIENT CORINTH. Part I. From the Earliest Times to 404 B.C.—J. G. O'Neill—*Johns Hopkins Press*, 270 p., \$5. In this history of Greece the ordinarily conspicuous cities of Athens and Sparta step back to give the lime-light to an important city of commerce, Corinth. The topography of Corinth and the architectural features of the city in various periods are dealt with in special preliminary chapters, thus setting the scene in the reader's mind for an understanding of the city's history. Then, the progress of Greek civilization is carefully traced from prehistoric times in Corinth up through the city's participation in the Peloponnesian War. Special attention is paid to the argument as to whether Corinth existed as a Mycenaean settlement, and the conclusion is affirmative. A second volume is to continue the story to the year 146.

Science News Letter, December 13, 1930

Public Health

CITY NOISE—New York City Noise Abatement Commission. 308 p. The report of the commission appointed by the city's health commissioner, Dr. Shirley W. Wynne. Edited by Edward F. Brown, E. B. Dennis, Jr., Jean Henry and G. Edward Pendray. Of immense general interest and of particular value to municipalities planning to cope with their own noise problems. The report tells what noises are most annoying, how noise affects health and efficiency, how loud various noises are, methods by which noise may be abated, and the progress made in this direction.

Science News Letter, December 13, 1930

Mathematics

ALGEBRA—J. W. Calhoun, E. V. White & T. McN. Simpson, Jr.—*Johnson*, 485 p., \$1.40. A new text for high schools in which the authors, they say, aim "to talk directly to the student and to appeal to his . . . common sense."

Science News Letter, December 13, 1930

General Science

ELEMENTARY SCIENCE BY GRADES—Book Five, Ellis C. Persing & C. Louis Thiele—*Appleton*, 309 p., \$96; **Book Six**, Ellis C. Persing & John A. Hollinger—*Appleton*, 340 p., \$1. That science should be taught from the very beginning of the child's schooling is the thought of the authors of this series and of Dr. Frank W. Ballou, superintendent of schools in Washington, the editor. These two books are for the fifth and sixth grades, the earlier ones having been covered in previous volumes. In each, nature study predominates, for that is more familiar to the child than the more special scientific topics. In Book Six, elementary facts about astronomy are introduced and also something of electricity. By the time the child brought up in a school using this series reaches high school, he should be well equipped to study the individual sciences, and not waste time in a hurried general science course that leaves him with a rather hazy smattering of a number of topics and little real knowledge of any.

Science News Letter, December 13, 1930

Chemistry

CHEMISTRY AND COOKERY—Annie Louise MacLeod and Edith H. Nason—*McGraw-Hill*, 545 p., \$3.50. Essentially a textbook of chemistry for home economics students, this book might be very useful to the intelligent housewife or cook who has remembered her high school science course. The practical culinary applications of chemical theory are given frequently and clearly. Why a soufflé falls, how to cook an egg so the yolk is firm and the white tender, the reason for adding salt in beating egg whites and for using cream of tartar to make angel food cake are among the many practical hints to be found in the book.

Science News Letter, December 13, 1930

Zoology

VERTEBRATE NATURAL HISTORY OF A SECTION OF NORTHERN CALIFORNIA THROUGH THE LASSEN PEAK REGION—Joseph Grinnell, Joseph Dixon and Jean M. Linsdale—*University of California Press*, 594 p., \$6. An elaborate and exhaustive survey of a region which, because of its focus in one of the smaller but most interesting of American national parks, is visited every year by increasing numbers of persons interested in natural history.

Science News Letter, December 13, 1930